

TRAFFIC CONTROL PROCEDURAL GUIDELINE

For the Bureau of Turnpikes

New Hampshire Department of Transportation

**NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION
BUREAU OF TURNPIKES**

TRAFFIC CONTROL PROCEDURAL GUIDELINE

PURPOSE:

To define traffic control procedures to be utilized by Department personnel, when conducting traffic control for various work tasks along the Turnpike.

REFERENCES:

- Most current edition of the Manual on Uniform Traffic Control Devices (MUTCD)
- NHDOT Policy 402.01 – Adoption of Traffic Control Standards (MUTCD)
- NHDOT Policy 402.06 - Flagger and Uniformed Officer Use in Work zones
- NHDOT Policy 402.05 – NHDOT Standard Operating Procedure for use of DMS
- NHDOT Policy 601.01- Guidelines for Implementation of the Work Zone Safety and Mobility Policy
- NHDOT Work Zone Traffic Control Standard Plans
- State of New Hampshire Flagger Handbook

GENERAL:

This procedural guideline covers common traffic control activities performed by the Bureau of Turnpikes personnel. The examples shown reflect common operational activities and are not intended to cover every possible operational situation that may occur. These guidelines will be modified and updated periodically to reflect current practice as established in the referenced documents.

Figures 1 through 5 conforms to the standards set forth in the MUTCD and are intended to more clearly depict common operational situations encountered by Bureau personnel responsible for traffic control. For situations where the Figures are not applicable, the MUTCD shall be referenced for guidance.

TYPES OF OPERATIONS:

MOBLIE/SHORT TERM STATIONARY: (1 to 12 hours in duration)

- | | | |
|----------------------|--------------------------------------|----------|
| • Multi-Lane/One-Way | Sweeping or catch basin cleaning | Figure 1 |
| • Multi-Lane/One-Way | Work 15 or more feet from edge of TW | Figure 2 |
| • Multi-Lane/One-Way | Shoulder Work within 15 feet of TW | Figure 3 |
| • Multi-Lane/One-Way | One Lane Closed (MUTCD #33) | Figure 4 |
| • Multi-Lane/One-Way | Two Lanes Closed (MUTCD #37) | Figure 5 |
| • Multi-Lane/One-Way | Shoulder or Lane Patching | Figure 6 |

NOTES:

General: All vehicles or other support equipment shall be considered part of the work zone and shall be protected within the Traffic Control Layout. Arrow panels or boards, portable changeable message signs, impact attenuators, police and buffer spaces shall be used as described. The suggested length for buffer spaces is provided in Appendix A. Daytime lane closures are prohibited in certain areas on the Turnpike due to roadway traffic, shoulder widths and locations (see Appendix C Turnpike Lane Closure). The Administrator(s) must approve any changes to these restrictions.

Traffic Control Device Standards: Traffic control devices and flaggers shall conform to the standards set forth in Part 6 of the MUTCD or as modified by the Department's Work Zone Traffic Control Plan Standards. Below are the standards for the typical equipment Turnpikes use:

1. Traffic Cones: Minimum 28" orange cones with two retroreflective white sheeting collars per MUTCD.
2. Tubular: Minimum 42" orange cones with two retroreflective white sheeting collars per MUTCD.
3. Signs: 48" X 48" retroreflective sheeting.
4. Arrow boards: Recommend arrow board sign for high-speed facilities is 96" X 48" per the MUTCD.

Equipment shall be checked regularly to assure it still meets specifications or MUTCD requirements.

Changeable Message Boards (CMB) (MUTCD Sect 6F.60): Turnpike CMB's coupled with available Transportation Systems Management and Operations (TSM&O) Bureau boards provide for appropriate traffic control. Use of CMB's shall follow Part 6 of the MUTCD and can be used ahead of a traffic control operations to warn motorists of roadwork ahead. We can also use TSMO's CMB's or Dynamic Message Signs (DMS) if needed. To utilize a TSM&O board, fill out the TSMO CMB request form (See Appendix B).

Messages on CMB shall consist of a maximum of three lines of 8 characters per line per frame. Message should be limited to two frames. DMS allows for 18 characters per line but shall only consist of two frames. All messages shall be approved by the Maintenance Supervisor or Superintendent.

Uniformed Officer Use: Uniformed officers may be utilized to enhance driver recognition of the work site or to provide temporary traffic control. The use of uniformed officers shall be consistent with NHDOT policy - Flagger and Uniformed Officer Use in Work Zones. The attached figures do not show the placement of uniformed officers but typically Uniformed Officers shall not be placed within the taper or buffer area of the lane or shoulder closure. For shoulder closures the police vehicle shall be within the shoulder area so as not to encroach onto the travelled way. For lane closures the police vehicle shall be parked straddling the TW/shoulder within the taper after the arrow board. If the work within the lane closure extends with progressing work areas within the lane closure, the uniform officer should move

with the operation but shall be placed at least 200' behind the impact attenuator unit and park straddling the TW/shoulder.

Impact Attenuator Use (MUTCD Sect 6F.86): When a work zone is set up for personnel to work on the travel way or shoulder of any divided high speed highway, unless noted within the document or approved by Administrator(s) or Maintenance Superintendent, a truck or trailer mounted attenuator shall be used.

Highway Crossover Use: The use of a crossover on any divided high-speed highway, as a matter of convenience or to reverse direction, is **PROHIBITED**. Employees driving vehicles and equipment will travel to the next available exit to reverse direction. Travel across the state border to reach the next interchange is appropriate. When work is conducted within or from a highway median, a crossover may be used to gain access to the work area. Crossovers may also be utilized for parking of vehicles and equipment during the work operation, providing they do not block use of the crossover by others. Vehicles entering a crossover shall use vehicle directional signals and activated their warning lights. When reentering the highway from a crossover, drivers shall exercise extreme caution, activated warning lights, wait for a break in traffic that will provide plenty of advance warning to the traveling public, and use turning signals to move right after entry.

Highway Shoulder Travel: Vehicles or other slow moving equipment traveling on the shoulder of any interstate highway should be equipped with its own operating warning lights or have a vehicle with operating warning lights following directly behind. Equipment (i.e. Loader) accessing a work zone shall travel up the roadway shoulder and enter the work zone when near the work activity. **DO NOT** travel up the travelway impacting traffic with your equipment.

TRAFFIC CONTROL LAYOUT:

- The Patrol Foreman or Assistant Patrol Foreman is responsible for implementing a Traffic Control Plan (TCP) for work to be performed. The TCP shall conform to the criteria established in this procedural guideline.
- Duration of Closures - Work efforts shall progress efficient as possible to minimize duration of the lane and shoulder closure. The crew shall notify the TSM&O of the start and end of all lane and shoulder closures for tracking and reporting by the TSM&O. The start is just prior to setting out your cones, arrow board etc. The end is after all TC devices are picked up. Changes to TC package notify TSM&O. The crew shall notify the TSM&O what Turnpike TC procedure they are implementing.
- Any adjustments concerning the TCP, prior to field operations, shall be reviewed with the Maintenance Supervisor or Superintendent and documented on the Maintenance Traffic Control Plan (MTCP) form (See Appendix D). Whenever an incident involving the public within the TCP, The MTCP shall also be filled out including any other documents required i.e. accident investigation report, motor vehicle accident report etc.
- Traffic control for activities that do not involve work described herein shall follow the MUTCD and shall be reviewed with the Maintenance Supervisor, Superintendent or Administrator.

TRAFFIC CONTROL PLAN (TCP) COMMITTEE REVIEW:

The guidelines contained in this document, general notes and Figures 1 through 5 have been reviewed with the New Hampshire Department of Transportation's Traffic Control Plan Committee and found to be in conformance with the MUTCD and Department Standards.

IMPLEMENTATION AUTHORIZATION: _____ Christopher M. Waszczuk, PE Administrator Bureau Of Turnpikes Date: _____	REVISED: DATE: _____ SUPERSEDES GUIDELINES DATED: _____
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ATTACHMENTS:

Appendix A: General Notes
Appendix B: TSM&O CMB/DMS Request
Appendix C: Turnpike Lane Closure
Appendix D: MTCP Form
Appendix E Figures 1 thru 6

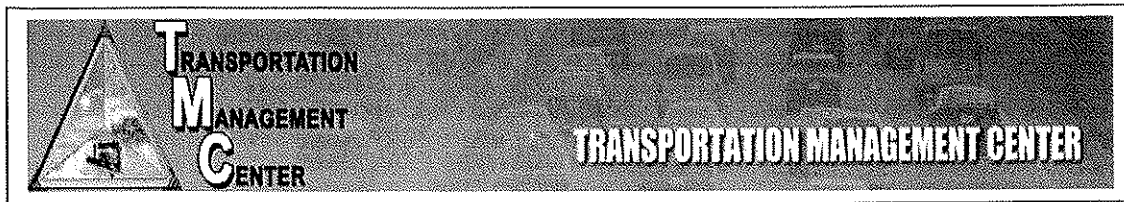
APPENDIX A - GENERAL NOTES

1. MINIMUM TAPER LENGTHS: (based on travel lane width W=12 feet)

POSTED SPEED (MPH) (S)	MERGING TAPER (L)	SHOULDER TAPER (1/3L)	SHIFTING TAPER (1/2L)
30	180'	60'	90'
35	245'	85'	125'
40	320'	110'	160'
45	540'	180'	270'
50	600'	200'	300'
55	660'	220'	330'
60	720'	240'	360'
65	780'	260'	390'

2. MAXIMUM CONE SPACING:

POSTED SPEED (MPH)	CONE SPACING IN TAPER	CONE SPACING IN BUFFER AND WORK ZONE
30	30'	60'
35	35'	70'
40	40'	80'
45	45'	90'
50	50'	100'
55	55'	110'
60	60'	120'
65	65'	130'



APPENDIX B

Request for the Use of Changeable Message Boards (CMB)

Requestor:

Department:

Date requested to use Changeable Message Boards:

From:

To:

Time requested to use Changeable Message Boards:

From:

To:

Requested Message: (can contain 8 characters per line)

Panel 1:

1st Line:

2nd Line:

3rd Line:

Panel 2:

1st Line:

2nd Line:

3rd Line:

Location of Request :

Reason for request: _____

Programmed into CMB by:

TSM&O Employee: _____

Date: _____

APPENDIX C

Effective through September 2016

Turnpike Day Time Lane Closure		
General Notes: <ul style="list-style-type: none">-Toll Plaza lane closures shall be coordinated with the Supervisor of Toll Operations or Toll Manager or Turnpikes Adminstrator(s).-No daytime ramp closures unless approved by a Turnpike Adminstrator(s).- Double lane closures shall be approved by a Turnpike Adminstrator(s).-Typically takes a crew 45 minutes to set up the lane closure with arrow board, signs, and & cones.-Saturday and Sunday lane closures are allowed depending on the time of the year and need to be approved by a Turnpike Adminstrator(s).- Coordinate all Press releases with NHDOT's Public Informational Officer-Times note the start in the implementation of the lane closure or time to be out of the lane including traffic control equipment.		
Location	Maintenance of Traffic for Daytime lane closure	
I-93		
I-93 NB & SB in Concord from mm 38.6 (Exit 14) to mm 35 (North of Grandview bridge)	No day time lane closures except for emergency guard rail repair. Daytime shoulder closures are allowed from 9:00 am to 3:00 pm Monday through Thursday and on Friday prior to 12:00 pm. During the low traffic periods ie Jan - April daytime lane closures may be approved through Turnpikes Adminstrator(s).	
I-93 NB & SB in Bow-Hooksett from mm 35 to I-93/I293 interchange	Single lane closures are allowed from 9:00 am to 3:00 pm Monday through Thursday. Friday no closure after 12:00 pm.	
Hooksett Toll Plaza ORT	No daytime closures unless an emergency, A press release shall be issued for all ORT lane closures.	
I-293		
I-293 NB & SB from mm 10.6 (I93 interchange) south to FEE Tpke/NH 101 Interchange	No day time lane closure except for emergency guard rail repair. Daytime shoulder closures are allowed from 9:00 am to 3:00 pm Monday through Thursday and on Friday prior to 12:00 pm. During the low traffic periods ie Jan - April daytime lane closures may be approved through Turnpikes Adminstrator(s).	
FEE TURNPIKE		
FEE Tpke NB & SB from I293/NH 101 Interchange to mm 11.2 (Exit 11)	Daytime lane & shoulder closures are allowed from 9:00 am to 3:00 pm Monday through Thursday and on Friday prior to 12:00 pm except in July and August unless approved by Turnpikes Adminstrator(s) Daytime shoulder closures during July and August are allowed from 9:00 am to 3:00 pm Monday through Thursday and on Friday prior to 12:00 pm. In the areas with three (3) lanes daytime lane and shoulder closure are allowed from 9:00 am to 3:00 pm Monday through Thursday and on Friday prior to 12:00 pm	
FEET NB & SB from Exit 11 mm 11.2 to mm 10.2	Single lane closures are allowed from 9:00 am to 3:00 pm Monday through Thursday. Friday no closure after 12:00 pm.	
FEET NB & SB from mm 10.2 to mm 9.4	No day time lane closure except for emergency guard rail repair. Daytime shoulder closures are allowed from 9:00 am to 3:00 pm Monday through Thursday and on Friday prior to 12:00 pm. During the low traffic periods ie Jan - April daytime lane closures may be approved through Turnpikes Adminstrator(s).	
FEET NB & SB from mm 9.4 to mm 0(Mass line)	Single lane and shoulder closures are allowed from 9:00 am to 3:00 pm Monday through Thursday. Friday no closure after 12:00 pm.	

APPENDIX C

Effective through September 2016

I-95		
Note: Daytime lane closures from June through first weekend in September must be approved by Administrator(s).		
I-95 NB & SB from Mass line to mm 12.4	Shoulder and single lane closures are allowed from 9:00 am to 3:00 pm Monday through Thursday. Friday no closure after 12:00 pm.	
Hampton Toll Plaza ORT	No daytime closure unless an emergency. A press release shall be issued for all ORT lane closures.	
I-95 NB & SB from mm 12.4 to mm 14.0	No day time shoulder or lane closures except for emergencies.	
I-95 NB & SB from mm 14 to State line	Shoulder and single lane closures are allowed from 9:00 am to 3:00 pm Monday through Thursday. Friday no closure after 12:00 pm.	
Spaulding Turnpike		
Spaulding NB & SB from mm 0 to mm 3.0 (Little Bay Bridge area)	No day time lane closure except for emergency guard rail repair. Day time shoulder closure is allowed from 9:00 am to 3:00 pm Monday through Thursday. Friday no closures after 12:00 pm. In areas with three (3) lanes daytime lane and shoulder closures are allowed from 9:00 am to 3:00 pm Monday through Thursday and on Friday prior to 12:00 pm	
Spaulding NB & SB from mm 3.0(Little Bay Bridge area) to mm 5.8	No day time shoulder or lane closures except for emergencies.	
Spaulding NB & SB from mm 5.8 to mm 12.4 (past Exit 9 in Dover)	Day time lane & shoulder closures are allowed from 9:00 am to 3:00 pm Monday through Thursday. Friday no closures after 12:00 pm. Closures during July and August shall be removed if the traffic backs up a 1/2 mile or greater.	
Spaulding NB & SB from mm 12.4 (North of Exit 9) to mm 17.8 (Exit 12)	Shoulder and single lane closures are allowed from 9:00 am to 3:00 pm Monday through Thursday. Friday no closures after 12:00 pm.	
Spaulding NB & SB Exit 12 to Exit 16	Shoulder and single lane closures are allowed from 9:00 am to 3:00 pm Monday through Thursday. Friday no closures after 12:00 pm.	

APPENDIX C

Effective through September 2016

Turnpike Night Time Lane Closure	
General Notes: <ul style="list-style-type: none"> -Toll Plaza lane closures shall be coordinated with the Supervisor of Toll Operations or Toll Manager or Turnpikes Administrator(s). -Ramp closures need to be approved by Turnpike's Administrator(s). - Times may be adjusted based on the time of the year with approval from your Supervisor. -Saturday and Sunday lane closures are allowed depending on the time of the year and need to be approved by a Turnpike Administrator(s). -Coordinate all Press releases with NHDOT's Public Informational Officer -During summer months lane closure start times may need to be altered to a later time confirm start time with your Supervisor. -Times note the start in the implementation of the lane closure or time to be out of the lane including traffic control equipment. 	
Location	Maintenance of Traffic for night time lane closure
I-93 NB & SB	Sunday through Thursday 8:00 pm to 5:00 am. No lane closure Friday or Saturday nights
FEET NB & SB	Sunday through Thursday 8:00 pm to 5:00 am. No lane closure Friday or Saturday nights
I-95 NB & SB	Sunday through Thursday 8:00 pm to 5:00 am. No lane closure Friday or Saturday nights
Spaulding NB & SB	Sunday through Thursday 8:00 pm to 5:00 am. No lane closure Friday or Saturday nights

Maintenance Traffic Control Plan Form

Date: _____

Traffic Control Procedure Used: _____

Time TMC Notified: _____

Name of Individual Notified: _____

Weather Conditions: _____

TCP setup time:

Start: _____ Complete: _____

TCP Removal time

Start: _____ End: _____

Time TMC was notified of the TCP removal: _____

Name of Individual Notified @ TMC: _____

Comments: _____

Filled Out By:

Employee: _____

Date: _____




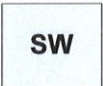



Position: _____

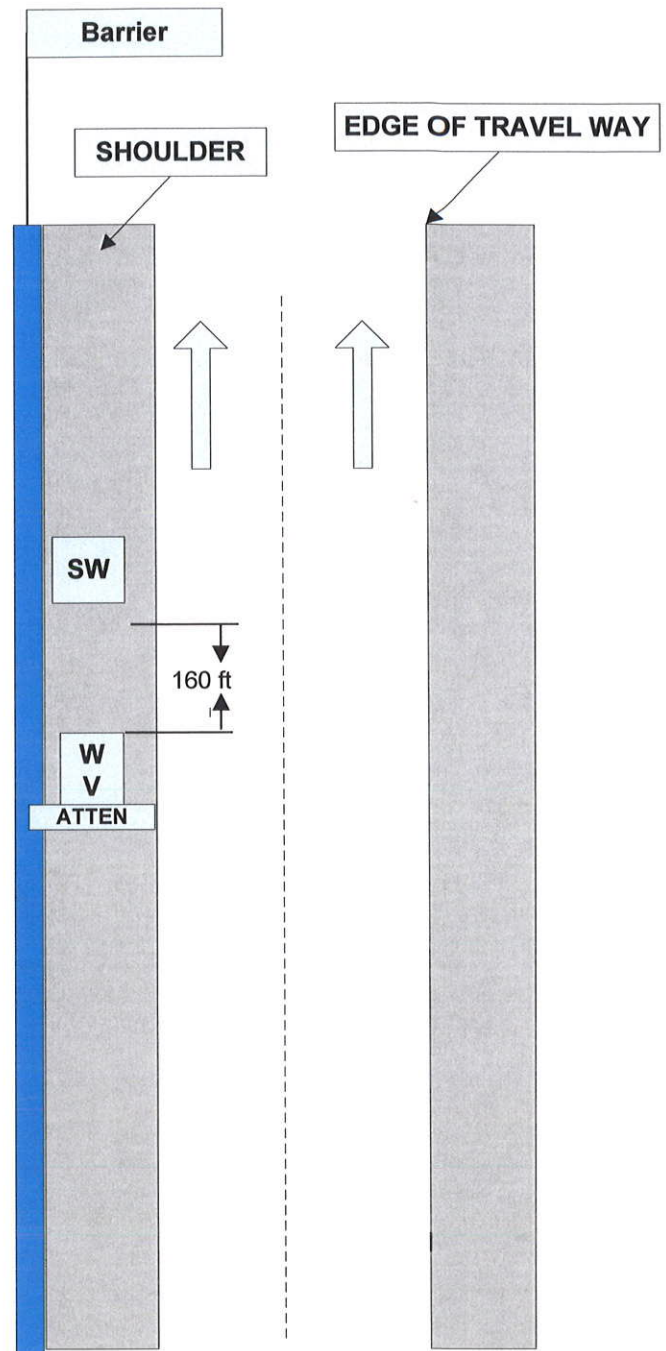
Sweeping and Catch Basin Cleaning Adjacent to Multilane One Way Traffic

NOTES:

- 1.DURING SWEEPING AND CATCH BASIN CLEANING OPERATION THE VEHICLE SHALL ALWAYS HAVE THE ARROW BOARD ON CAUTION MODE (REF. MUTCD SECTION 6F.61)
2. DURING SWEEPING ACTIVITIES, IF ANY PART OF THE SWEEPER EXTENDS INTO THE TRAVEL LANE , A LANE CLOSURE IS NECESSARY.
- 3.WHEN PERFORMING A SWEEPING OR CATCH BASIN CLEANING OPERATION, A VEHICLE WITH AN IMPACT ATTENUATOR OR STATE POLICE SHALL ALWAYS ACCOMPANY THE VEHICLE PERFORMING THE WORK. IF STATE POLICE IS USED IT SHALL BE LOCATED IN THE SAME POSITION OF THE IMPACT ATTENUATOR VEHICLE. A VEHICLE WITH AN ATTENUATOR IS RECOMMENDED AS THE SHADOW VEHICLE. DO NOT USE STATE POLICE WITH ATTENUATOR.

LEGEND:

Cone	
Work Area	
Work Vehicle With Attenuator and Warning Lights	
Sweeper	
Arrow Board	
Broken Line =	
Sign	



NOT TO SCALE

Implemented
Date: _____




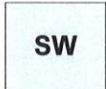



Appendix E Figure 1

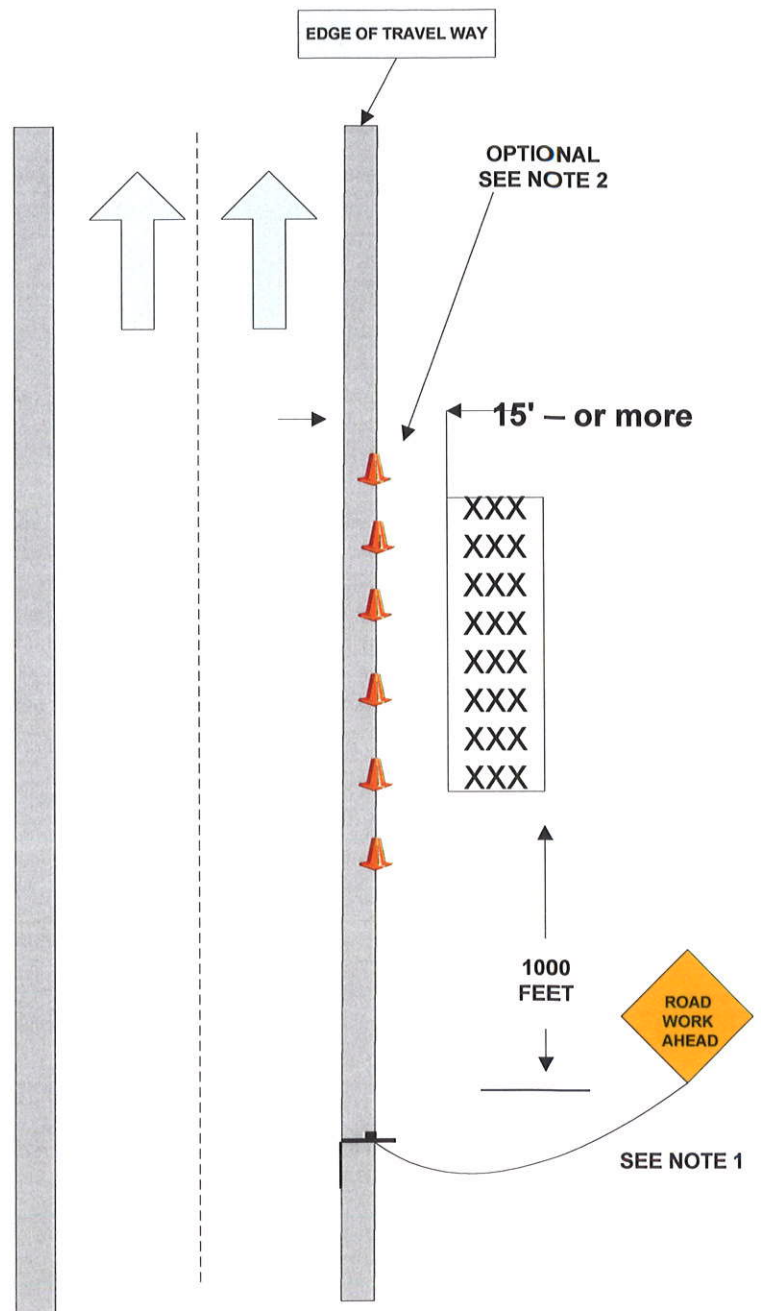
Work adjacent to roadway (15'- or more from TW) MULTI-LANE -- ONE WAY

NOTES:

1. AN ADVANCE WARNING SIGN IS REQUIRED ONLY ON THE SIDE OF THE ROAD WHERE THE WORK IS OCCURRING.
2. CONES MAY BE INSTALLED ALONG THE EDGE OF THE PAVEMENT TO ENHANCE DRIVER RECOGNITION OF THE WORK AREA
3. SIGNS AND CONES ARE NOT REQUIRED IF THE WORK AREA AND ALL EQUIPMENT ARE BEHIND BARRIER OR GUARDRAIL.

LEGEND:

Cone	
Work Area	
Work Vehicle With Attenuator and Warning Lights	
Sweeper	
Arrow Board	
Broken Line	
Sign	



NOT TO SCALE

Implemented
Date: _____

Appendix E Figure 2

**Shoulder work – multi-lane – one way traffic
(within 15' of travel way with no encroachment
on TW)**

NOTES:

1. A TRUCK WITH IMPACT ATTENUATOR SHOULD BE PLACED AT LEAST 80' BEHIND THE WORK AREA WITHIN THE TRAFFIC CONTROL PACKAGE. THE IMPACT ATTENUATOR SHALL MOVE WITH THE WORK AREA TO PROVIDE PROTECTION.







2. SIGNS AND CONES ARE NOT REQUIRED IF THE WORK AREA AND ALL EQUIPMENT ARE BEHIND BARRIER OR GUARDRAIL.

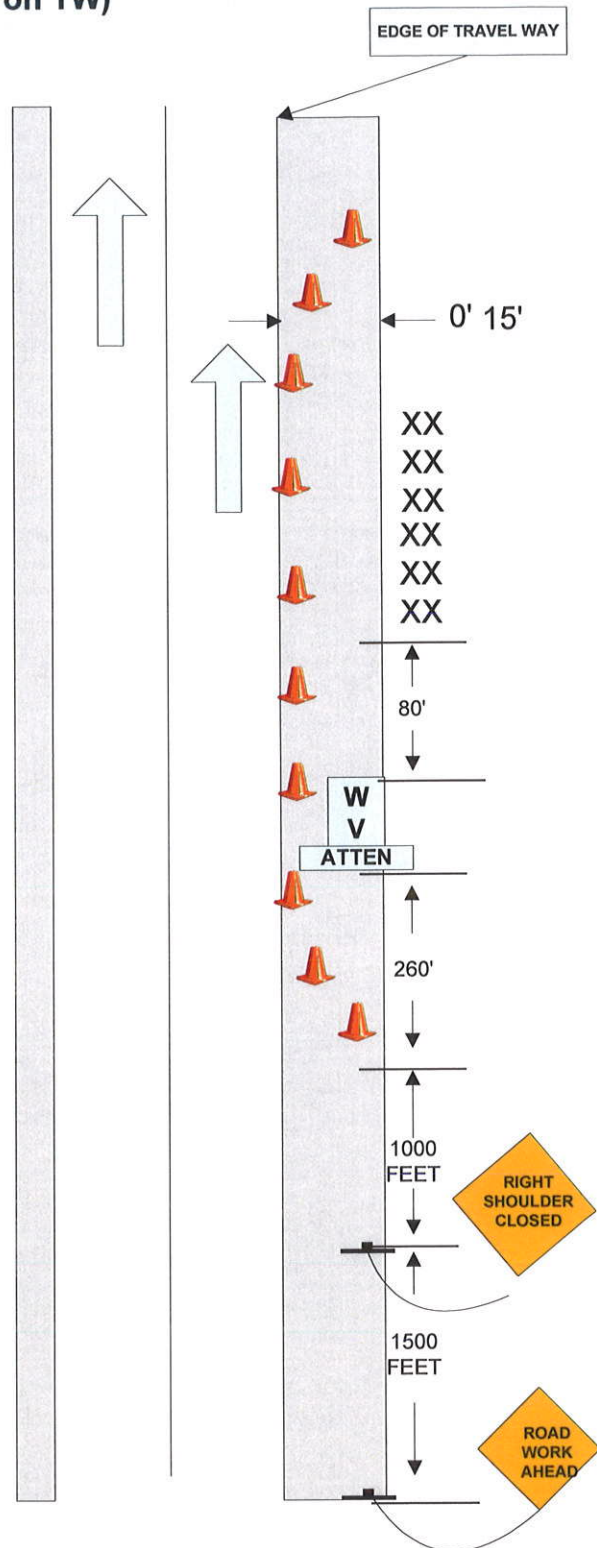
3. EXISTING TRAVEL WAY WIDTH SHALL BE MAINTAINED. CONES SHALL NOT INTRUDE INTO THE TRAVEL WAY.

4. THE SHOULDER CLOSED SIGN, TAPER AND ATTENUATOR ARE NOT REQUIRED IF THE WORK AREA IS COMPLETELY OFF THE PAVED SHOULDER AND BEHIND GUARDRAIL. SIGNS SHALL BE PLACED ALONG THE EDGE OF PAVEMENT TO DELINEATE WORK AREA.

5. THE "LEFT SHOULDER CLOSED AHEAD" SIGN SHOULD BE USED FOR LEFT SIDE SHOULDER CLOSURES.

LEGEND:

Cone	
Work Area	
Work Vehicle With Attenuator and Warning Lights	
Arrow Board	
Broken Line =	
Sign	



Implemented
Date: _____

Appendix E Figure 3

Lane Closure on a Divided Highway

NOTES:

1. THIS INFORMATION ALSO SHALL BE USED WHEN WORK IS BEING PERFORMED IN THE LANE ADJACENT TO THE MEDIAN ON A DIVIDED HIGHWAY. IN THIS CASE, THE LEFT LANE CLOSED SIGNS AND THE CORRESPONDING LANE ENDS SIGNS SHALL BE SUBSTITUTED

2. AN ARROW BOARD SHALL BE USED WHEN A TRAVEL WAY LANE IS CLOSED. WHEN MORE THAN ONE TRAVEL WAY LANE IS CLOSED, A SEPARATE ARROW BOARD SHALL BE USED FOR EACH CLOSED LANE.

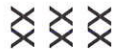
3. TAPER LAYOUT IS FOR THE SPEED LIMIT OF 65 MPH. FOR OTHER SPEEDS SEE APPENDIX A FOR DIMENSIONS.

LEGEND:

Cone



Work Area



Work Vehicle With Attenuator and Warning Lights



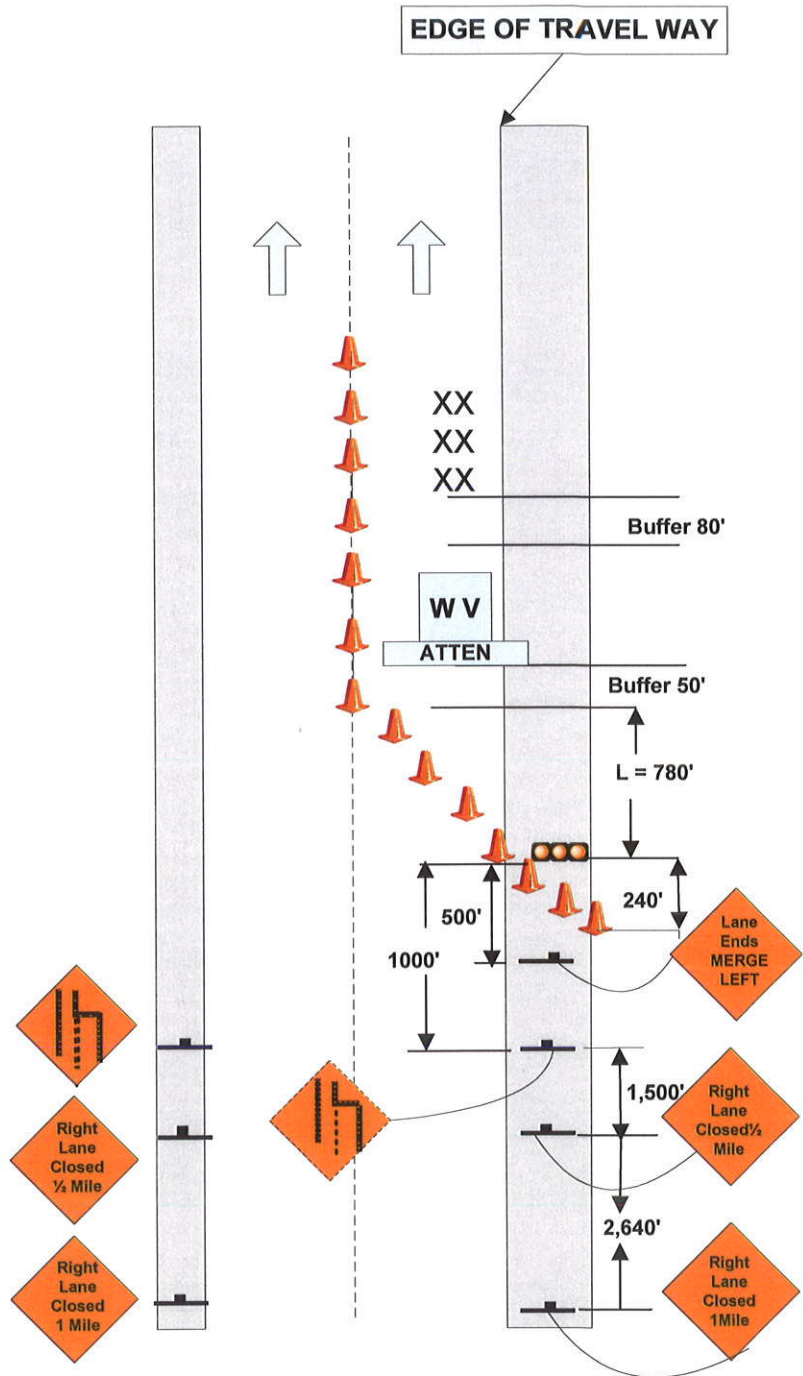
Arrow Board



Broken Line =



Sign



NOT TO SCALE

Implemented
Date: _____

Appendix E Figure 4

Double Lane Closure on a Divided Highway

NOTES:

1. THIS INFORMATION ALSO SHALL BE USED WHEN WORK IS BEING PERFORMED IN THE LANE ADJACENT TO THE MEDIAN ON A DIVIDED HIGHWAY. IN THIS CASE, THE LEFT LANE CLOSED SIGNS AND THE CORRESPONDING LANE ENDS SIGNS SHALL BE SUBSTITUTED

2. AN ARROW BOARD SHALL BE USED WHEN A TRAVEL WAY LANE IS CLOSED. WHEN MORE THAN ONE TRAVEL WAY LANE IS CLOSED, A SEPARATE ARROW BOARD SHALL BE USED FOR EACH CLOSED LANE.

3. TAPER LAYOUT IS FOR THE SPEED LIMIT OF 65 MPH. FOR OTHER SPEEDS SEE APPENDIX A FOR DIMENSIONS.

LEGEND:

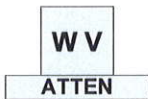
Cone



Work Area



Work Vehicle With Attenuator and Safety Lights



Arrow Board



Broken Line =



Sign



XX
XX
XX

WV
ATTEN



L=780'

L=780'

500'

1000'

1,500'

2,640'

EDGE OF TRAVEL WAY

Buffer 80'

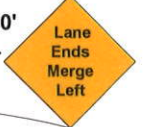
Buffer 50'

L=780'

2L=1560

L=780'

240'



NOT TO SCALE

Implemented
Date: _____

Shoulder or Lane Patching Adjacent to Multilane One Way Traffic

NOTES:



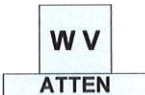
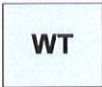



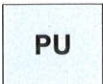
1. Any patching that takes longer than 30 minutes shall be completed with a lane or shoulder closure depending where it is located. Any patching greater than 2' off the shoulder line will require a lane closure or rolling road block. Coordinate with Maintenance Superintendent and Supervisor.

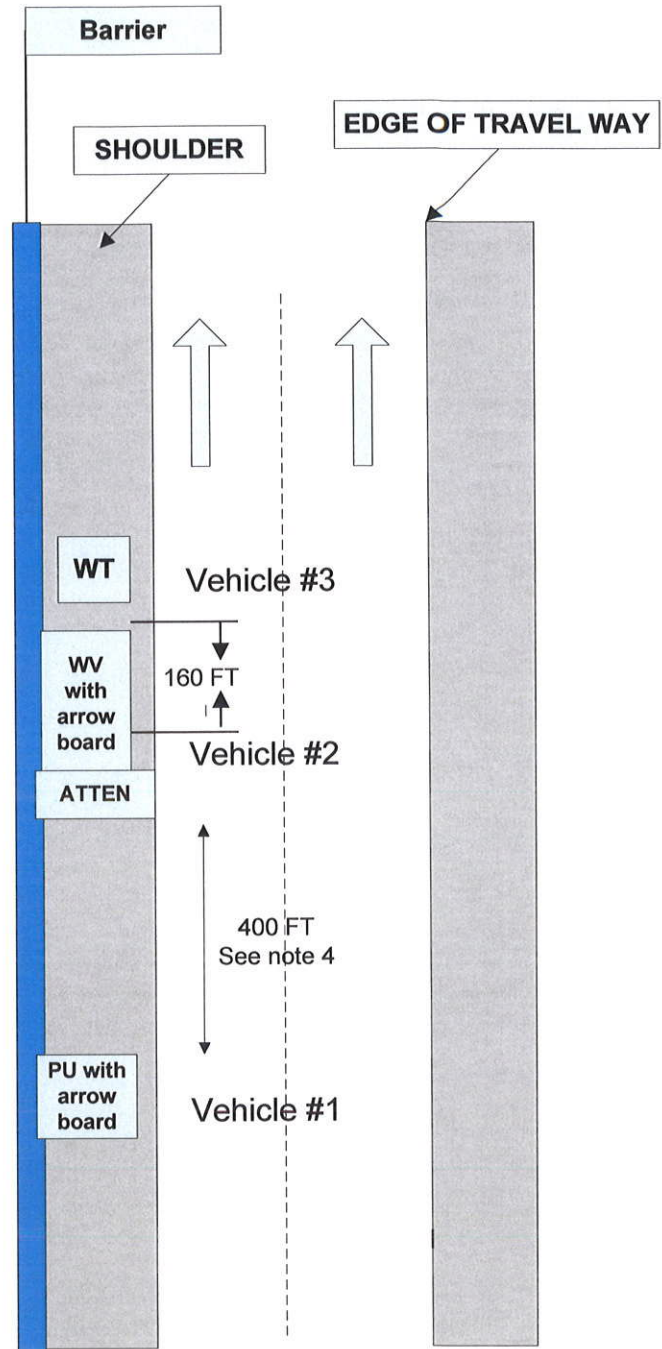
2. Patching on shoulder or less than 2' off the shoulder line taking less than 30 minutes shall follow this layout.

3. If work is within the travel way (TW) Vehicle 2 shall be within the TW protecting the work area. The placement of Vehicle 1 depends on the topography of the road way but at the minimum of 400' (10 broken lines) from Vehicle 2. This distance shall be adjusted due to sight distance, for example if the work is on the other side of the hill, a vehicle shall be on the crest of the hill.

4. Vehicle 1 shall be on the shoulder with a caution bar to warn traffic of the work.

LEGEND:

Cone	
Work Area	
Work Vehicle With Attenuator and Warning Lights	
Work Truck	
Arrow Board	
Broken Line =	
Sign	
Pick Up	



NOT TO SCALE

Implemented
Date: _____